ASDC Tour

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Introduction

- INTRODUCTION - Welcome to the Langley Atmospheric Science Data Center. All questions shall be submitted through the forms that have been provided. The answers to your questions will be posted. Please feel free to ask for forms and complete one question per form. Also photography is not allowed.

- We are in Building 1268-C where the ASDC personnel and equipment are located. The first floor of this building consists of office space for civil servants and contract staff members, a conference room and a break room. The second floor consists of additional offices, a conference room and the Operations Area where the tour will focus.

Tour Stop #1 : Security & Operator Area

- Security – Access to the Building, entrance to the ASDC first floor office cubicle suite, and the second floor SD server and operations area are through the Center-wide Cardkey Access Control System. The building's external doors are locked between 6PM and 6AM. The first floor office cubicle suite and the second floor SD server and operations area are always locked.
- Networks
  - The ASDC systems use a backend network for high-speed access between systems and use the Center network and NASA provisioned access to the Wide Area Network (WAN).
- Operations Area: operators support manual components needed to run science production processing and challenge unidentified personnel entering operations/server area.
- The operator support is covered by 2 shifts on Monday through Friday (approximately 18 hours/day) and 1 8-hour shift on Saturday, Sundays, and most Federal holidays.

Tour Stop #2 : ASDC Information Overview

- There are two archive systems supporting the ASDC
  - Archive Next Generation (ANGe) system
    - ANGe is currently fully supported by STARSS II
    - Major projects include CERES, CALIPSO, field campaigns
  - Langley EOSDIS Core System Information System (ECS)
    - ECS system hardware and software are maintained by the ESDIS Project Office at GSFC
    - Operation and production of ECS are currently supported by the STARSS II
    - Major missions supported include MISR, SAGE III
- STARSS II currently supports production science processing for CERES, MISR, and FLASHFlux
- ASDC provides system administration and IT Security for non-ACES SD science support systems

Tour Stop #3: Power & HVAC

- Power is disbursed through the room via several Power Distribution Units (PDUs)
- Power redundancy is provided by 2 300KVa Uninterrupted Power Supply (UPSs) systems and a 1 MW diesel generator maintained by the building's facility manager.
- UPSs power condition and provide failover for server hardware until diesel generator starts
- Diesel generator powers both server hardware and HVAC as long as generator is fueled

Tour Stop #4 : STK8500 Tape Libraries

- One tape library is designated for ANGe archive. Multiple copies of LTO-4 tapes are made of ANGe archive data with copies sent periodically to off-site facility for D&R purposes. Second copies of tapes in archive are also used to restore any corrupt files.
- One tape library is used for backups of systems level data and second copies periodically sent to off-site facility for D&R purposes
- The capacity of each tape library is approximately 8PB with LTO-4 tapes and approximately 24 PB with LTO-6 tapes
- Current technologies involved with this system is StorNext and NetBackup

Tour Stop #5: Dell Cloud Computing Cluster

- Pilot system being setup to serve as a private cloud to support processing
- Over 5,000 nodes in Dell x86 system
- Technologies currently planned to be utilized are Eucalyptus, OpenStack, and StackIQ, Infiband
- Plan is to pilot private cloud to support local processing requirements in SD and learn about real-world use of cloud
- Future is to align with SMD, ESDIS, and Agency direction in cloud once it is determined

Tour Stop #6: Cisco Nexus Enterprise Class Switch

- Cisco Nexus Enterprise class switch provides most connectivity between IT components in ASDC
- Technology is 10Gig, 1Gig, and fiberchannel
- Switch is under full vendor maintenance
- Cable trays installed to keep network wiring out from under the floor
  - Under floor is cool airflow and power

Tour Stop #7: Various Storage and Processors

- Storage primarily consists of racks of RAID disks (RAID 5 and 6)
  - RAID vendors include IBM, EMC, SGI
  - Toshiba NAS system in web architecture
- Processors consist of x86 platforms and P4, P6, and P7 platforms
  - Processor vendors include IBM, SGI, Dell